

SHAPIRO, S.Ye., VERETA, L.A., KONSTANTINOV, A.A.

Conference devoted to 20 years of studying tick-borne encephalitis in
the Far East. Vop.virus. 3 no.3:188-190 My-Je '58 (MIRA 11:7)
(SOVIET FAR EAST--ENCEPHALITIS)

Shapiro, S. Ye.
ZELENSKIY, A.I.; SHAPIRO, S.Ye.

Case of amebiasis of local origin among inhabitants of Khabarovsk
Territory. Med.paraz. i paraz.biol. 27 no.1:108 Ja-F '58.
(MIRA 11:4)

1. Iz Khabarovskogo gosudarstvennogo meditsinskogo instituta.
(Khabarovsk Territory--AMEBIASIS)

MASLOV, A.V.; SHAPIRO, S.Ye.

Conference devoted to a 20-year study of tick-borne encephalitis
in the Far East. Med.paraz. i paraz.bol. 27 no.5:624-625 S-O '58.
(MIRA 12:1)

(ENCEPHALITIS---CONGRESSES)

SHAPIRO, S.Ye.; KALMYKOVA, A.D.; KLIMENKO, O.I.; ZELENSKAYA, M.I.; TIMOFEYeva,
A.A.; GARBUZOV, M.M.

Incidence of tularemia in Khabarovsk region. Zhur.mikrobiol.epid. i
immun. 29 no.2:21-24 F '58. (MIRA 11:4)

1. Iz kliniki infektsionnykh bolezney Khabarovskogo meditsinskogo
instituta i Khabarovskoy protivochumnoy stantsii.

(TULAREMIA, epidemiology,
in Russia (Rus)

SHAPIRO, S.Ye.

First joint session of the Khabarovsk Institute of Epidemiology and Hygiene and the Khabarovsk Territory branch of the All-Union Society of Microbiologists, Epidemiologists and Specialists in Infectious Diseases. Zhur.mikrobiol.epid. i immun. 29 no.2:153-154 F '58.

(COMMUNICABLE DISEASES)

(MIRA 11:4)

SHAPIRO, S.Ye.

Conference devoted to the 20th anniversary of the study of tick-borne
encephalitis in the Far East. Zhur. mikrobiol. epid. i. immun. 29 no.8: .
153-154 Ag '58. (MIRA 11:10)

(ENCEPHALITIS)

SHAPIRO, S.Ye.

"Treatment of infectious diseases." Zhur.mikrobiol. epid. i immun.
29 no.9:138-140 S'58 (MIRA 11:10)
(COMMUNICABLE DISEASES)

Shapiro, S. Ye.

USSR / Pharmacology. Toxicology. Chemicotherapeutic Preparations. Anti-Biotics. V

Abs Jour : Ref. Zhur - Biologiya, No. 3, 1959, 14032

Author : Shapiro, S. Ye.

Inst : -

Title : Materials Pertaining to the Study of Recurrences in Typhoid-Paratyphoid Patients Treated With Synthomycin.

Orig Pub : Zh. mikrobiol., epidemiol. i immunobiol., 1958, No. 4, 47-52

Abstract : Of 300 patients with typho-paratyphoid diseases, treated with synthomycin (I), recurrences took place in 82 patients (27.3%); in 31 patients (10.3%), prolonged subfebrile rises of T_0 were observed, which could not be explained by complications or accompanying diseases. The smallest number of recurrences (8.5%) were observed

Card 1/2

SHAPIRO, S.Ye.; KONSTANTINOVA, I.A.

Botulism treated with Diaferm-3 antitoxin serum. Zhur.
mikrobiol.epid. i immun. 30 no.5:138 My '59. (MIRA 12:9)

1. Iz Khabarovskoy gorodskoy infektsionnoy bol'nitsy.
(BOTULISM)

SHAPIRO, S.Ye. (Khabarovsk)

Some considerations on the teaching of a course on infectious diseases
with epidemiology in departments of therapeutics. Zhur.mikrobiol.epid.
i immun. 30 no.8:26-27 Ag '59. (MIRA 12:11)
(EPIDEMIOLOGY education)

SHAPIRO, S.Ye.

Problems in infectious pathology, epidemiology, and parasitology at
the seventeenth session of the Khabarovsk Medical Institute. Zhur.
mikrobiol., epid.i immun. 30 no.11:157 N '59. (MIRA 13:3)
(COMMUNICABLE DISEASES)

SHAPIRO, S.Ye., dotsent (Khabarovsk)

Review of K.V. Bunin's book "Role of immunity and allergy in the
treatment of infectious diseases." Terap.arkh. 31 no.12:81-82 D
'59. (MIRA 13:4)

(IMMUNITY)

(ALLERGY)

(BUNIN, K.V.)

SHAPIRO, S.Ye., dotsent (Khabarovsk)

Peculiarities of Widal's reaction in typhoid-paratyphoid
patients treated with synthomycin. Kaz.med.zhur. 40 no.5:
119 S-O '59. (MIRA 13:7)
(CHLOROMYCETIN) (TYPHOID FEVER--AGGLUTINATION REACTION)

SHAPIRO, S.Ye.; BARKAGAN, Z.S.

History of hemorrhagic fever in Central Asia. Vop. virus. 5
no. 2:245-246 My-S '60. (MIRA 14:4)
(SOVIET CENTRAL ASIA---EPIDEMIC HEMORRHAGIC FEVER)

KONSTANTINOV, A.A.; SHAPIRO, S.Ye.

Protein fractions of the blood serum in some infectious diseases.
Vop.med.khim. 6 no.1:14-18 Jan-F '60. (MIRA 13:5)

1. Biochemical Laboratory of the Research Institute for Epidemiology
and Hygiene and Chair of Infectious Diseases of the Medical Insti-
tute Habarovsk.

(PROTEINS)

(COMMUNICABLE DISEASES blood)

SHAPIRO, S.Ye.; KONSTANTINOV, A.A.; ZELENSKAYA, M.I.; CHAPOVSKAYA, L.G.;
STAROSTINA, I.S.

Clinical and immunobiochemical parallels in typhoid-paratyphoid patients. Report No. 1: Effect of the severity of the course, the type of pathogen and the age factor on the protein composition of the blood serum of typhoid-paratyphoid patients. Trudy Khab.med. inst. no.20:38-42 '60. (MIRA 15:10)

1. Iz kliniki infektsionnykh bolezney (zav. dotsent S.Ye.Shapiro)
Khabarovskogo meditsinskogo instituta i biokhimicheskoy laboratorii
(zav. dotsent A.A.Konstantinov) Khabarovskogo nauchno-issledovatel'-
skogo instituta epidemiologii i gigiyeny (dir. A.M.Krupnikova).
(BLOOD PROTEINS) (TYPHOID FEVER) (PARATYPHOID FEVER)

KONSTANTINOV, A.A.; SHAPIRO, S.Ye.; STAROSTINA, I.S.; CHAPOVSKAYA, L.G.;
ZELENSKAYA, M.I.

Clinical and immunobiochemical parallels in typhoid-paratyphoid patients. Report No. 2: Effect of antibiotic therapy on the protein composition of the blood serum and Widal's reaction; the interrelation between Widal's reaction and the individual blood serum protein fractions. Trudy Khab.med.inst. no.20:43-48 '60.

(MIRA 15:10)

1. Iz kliniki infektsionnykh bolezney (zav. dotsent S.Ye.Shapiro)
Khabarovskogo meditsinskogo instituta i biokhimicheskoy laboratorii
(zav. dotsent A.A.Konstantinov) Khabarovskogo nauchno-issledovatel'-
skogo instituta epidemiologii i gigiyeny (dir. A.M.Krupnikova).
(BLOOD PROTEINS) (ANTIBIOTICS) (TYPHOID FEVER)

ZELENSKIY, A.I.; SHAPIRO, S.Ye.

Local amebiasis in Khabarovsk Territory. Trudy Khab.med.inst.
no.20:69-74 '60. (MIRA 15:10)

1. Iz kafedry patologicheskoy anatomii (zav. dotsent A.I.Zelenskiy),
i infektsionnykh bolezney (zav. dotsent S.Ye.Shapiro) Khabarovskogo
meditsinskogo instituta.
(Khabarovsk Territory--AMEBIASIS)

SHAPIRO, S.Ye.; ZHDANOV, I.S.; BARYSHNIKOVA, A.I.; KIREYEVA, R.Ya.;
CHAPOVSKAYA, L.G.; KRUPNIKOVA, A.M.; PODKOSOVA, N.I.

Analysis of an outbreak of paratyphoid B caused by infected chicken
egg products. Zhur. mikrobiol. epid i immun. 31 no.6:26-31 Je '60.
(MIRA 13:8)

1. Iz Khabarovskogo instituta epidemiologii i gigiyeny, Meditsinskogo
instituta i Gorodskoy sanitarno-epidemiologicheskoy stantsii.
(Khabarovsk--PARATYPHOID FEVER)
(FOOD CONTAMINATION)

SHAPIRO, S.Ye.

"Problem of infectious diseases and infestations," no.1. Zhur.
mikrobiol. epid. i immun. 31 no.7:148-150 J1 '60. (MIRA 13:9)
(DISEASES--CAUSES AND THEORIES OF CAUSATION)

SHAPIRO, S.Ye., dotsent

Method for determining the clinical and epidemiological effectiveness of antibiotic therapy with synthomycin and levomycetin in typhoid fever and paratyphoid A and B in children. Vop. okh. mat. i det. (MIRA 14:10)
6 no.3:51-55 Mr '61.

1. Iz kliniki infektsionnykh bolezney (zaveduyushchiy - dotsent S.Ye. Shapiro) Khabarovskogo meditsinskogo instituta (direktor - dotsent S.K.Nechepayev).
(CHLOROMYCETIN) (TYPHOID FEVER)
(PARATYPHOID FEVER)

POSTOL, G.S.; SHAPIRO, S.Ye.; FRISHMAN, R.D.; RYLOVA, Ye.S.; GRAKHOVA, L.I.;
ABUSHKEVICH, P.V.; MAZURIN, N.D.

Study of serous-viral meningitis in Khabarovsk in 1959. Vop. okh.
mat. i det. 6 no.11:9-14 N '61. (MLA 14:12)

1. Iz kliniki pediatrii (zav. - dotsent G.S.Postol), kliniki
infektsionnykh bolezney (zav. - dotsent S.Ye.Shapiro) Khabarovskogo
meditsinskogo instituta (dir. - prof. S.K.Nechepayev) i sanitarno-
epidemiologicheskogo otryada Dal'nevostochnogo okruga (nachal'nik
M.I.Lev). (MENINGITIS) (Khabarovsk--VIRUS DISEASES)

2
SHAPIRO, S.Ye., dotsent; KONSTANTINOV, A.A., dotsent; ZHDANOV, I.S., kand.
med.nauk; ZELENSKAYA, M.I., kand.med.nauk

Data of clinical, epidemiological, and biochemical studies on
hemorrhagic nephrosonephritis. Sov.med. 25 no.1:64-70 Ja '61.
(MIRA 14:3)

1. Iz Khabarovskogo instituta epidemiologii i mikrobiologii
(direktor A.M.Krupnikova) i kliniki infektsionnykh bolezney (zav.-
dotsent S.Ye. Shapiro) Meditsinskogo instituta (direktor - prof.
S.K.Nechepayev).

(EPIDEMIC HEMORRHAGIC FEVER)

VOLKOV, Ye.V., inzh.; REYK, L.M., inzh.; RYBNIKOV, K.F., dots.;
SKOROMKHOD, V.F., inzh.; SHCHERBO, S.Ye., inzh.; SHCHERBOV,
H.B., inzh.

Conversion of boiler furnaces from block peat to milled peat
by installing cyclone furnaces. Izv. vys. ucheb. zav.; energ.
4 no. 1:116-122 Ja '61. (MIRA 14:2)

1. Ural'skiy politekhnicheskii institut imeni S.M. Kirova,
Uralsmashzavod i Uralenergocher et. Predstavlena isfadra
promteploenergetiki Ural'skogo politekhnicheskogo instituta.
(Furnaces)

SHAPIRO, S.Ye., dotsent; ZHDANOV, I.S., kand.med.nauk; CHAPOVSKAYA, L.P.,
mladshiy nauchnyy sotrudnik

Egg products as a source of paratyphoid B. Gig.i san. 26 no.1:
112-114 Ja '61. (MIRA 14:6)

1. Iz Khabarovskogo instituta epidemiologii i gigiyeny i kliniki
infektsionnykh bolezney Khabarovskogo meditsinskogo instituta.
(PARATYPHOID FEVER) (EGGS—MICROBIOLOGY)

SHAPIRO, S.Ye.; KALMYKOVA, A.D.; GARBUSOV, M.A.

Case of laboratory infection with epidemic hemorrhagic nephros-
nephritis. Zhur. mikrobiol. epid. i immun. 32 no.5:116-117 My '61.
(MIRA 14:6)

1. Iz kliniki infektsionnykh bolezney Khabarovskogo meditsinskogo
instituta i protivochumony s'antsii.
(Khabarovsk—HEMORRHAGIC FEVER)

SHAPIRO, S.Ye.

"Treatment of infectious diseases (antibiotic therapy and hormone therapy)." Edited by G.P.Rudnev. Reviewed by S.E.Shapiro. Zhur. mikrobiol. epid. i immun. 32 no.5:132-134 My '61. (MIRA 14:6)
(COMMUNICABLE DISEASES) (RUDNEV, G.P.)

SHAPIRO, S.Ye., dots.; PIOTROVICH, A.K., kand. med. nauk; BUNIN, K.V.,
prof., red.; BELIKOV, G.P., red.; MATVEYEVA, M.M., tekhn. red.

[Antibiotic therapy with levomycetin and synthomycin in
typhoid and paratyphoid fever] Antibiotikoterapiia levomi-
tsetinom i sintomitsinom briushnogo tifa i paratifov. Pod red.
K.V.Bunina. Moskva, Medgiz, 1962. 193 p. (MIRA 15:3)
(LEVOMYSETIN) (CHLOROMYCETIN) (TYPHOID FEVER)
(PARATYPHOID FEVER)

SHAPIRO, S.Ye.

"Gamasid rickettsiosis (its clinical aspects and diagnosis)" by
I.R.Drobisniskii. Reviewed by S.E.Shapiro. Zdravookhranenie 5
no.4:59-61 J1-Ag '62. (MIRA 15:9)

1. Zaveduyushchiy kafedroy infektsionnykh bolezney Khabarovskogo
Meditsinskogo instituta.
(RICKETTSIAL DISEASES)

SHAPIRO, S.Ye.; KIRFYEVA, P.Ya.

Paratyphoid B fever in children with digestive infections.
Sov.med. 26 no.7:131-134 J1 '62. (MIRA 15:11)

1. Iz kliniki infektsionnykh bolezney (zav. - dotsent S.Ye. Shapiro) Khabarovskogo meditsinskogo instituta (dir. - prof. S.K.Nechepayev).

(PARATYPHOID FEVER)

SHAPIRO, S.Ye.; KIRSEYVA, R.Ya.

Characteristics of the clinical course of brucellosis in the
Far East. Zhur. mikrobiol., epid. i immun. 40 no.9:129 S'63.

(MIRA 17:5)

1. Iz kliniki infeksionnykh bolezney Khabarovskogo meditsinskogo
instituta.

LENKINA. M.S.; SHAPIRO. S.Ye.; ZELENSKAYA. M.I.; KULUSHEVA, N.K.

Characteristics of the isolation of bacteriophage in typhoid and paratyphoid patients in a light clinical course of the disease and treatment with antibiotics. Zhur.mikrobiol.,epid.i immun. 40 no.12:115-116 D '63.
(MIRA 17:12)

1. Iz Khabarovskogo instituta epidemiologii i mikrobiologii i kliniki infektsionnykh bolezney Khabarovskogo meditsinskogo instituta.

SHAPIRO, S.Ye.; LENKINA, M.S.; KULUSHEVA, N.K.

Study of phagotypes of the local strains of paratyphoid B bacteria
in Khabarovsk. Zhur. mikrobiol.; epid. i immun. 41 no.6:57-60 Je
'64. (MIRA 18:1)

1. Khabarovskiy institut epidemiologii i mikrobiologii i Khaba-
rovskiy meditsinskiy institut.

SHAPIRO, S.Ye.; LENKINA, M.S.; SAVEL'YEVA, M.A.; SEREGINA, M.M.

Infected chicks as the cause of familial infection with
Schottmüller's paratyphoid B. Zhur.mikrobiol., epid. i immun.
42 no.12:89-92 D '65.

(MIRA 1961)

1. Khabarovskiy meditsinskiy institut i Khabarovskiy institut
epidemiologii i mikrobiologii.

L 27618-66 EWT(1)/T JK

ACC NR: AP6018418

SOURCE CODE: UR/0240/65/000/012/0090/0091

AUTHOR: Shapiro, S. Ye.; Zelenskaya, M. I.

ORG: Clinio of Infectious Diseases, Khabarovsk Medical Institute (Klinika infektsion-nykh bolezney Khabarovskogo meditsinskogo instituta)

TITLE: Cases of botulism in the Khabarovsk region

SOURCE: Gigiyena i sanitariya, no. 12, 1965, 90-91

TOPIC TAGS: botulism, therapeutics, serum, epidemiology

ABSTRACT: The author presents case histories of inhabitants of the Khabarovsk region who contracted botulism following consumption of fish products infected with *Cl. botulinum*. The illness was in all cases traced to persons who fished for chum and pike for personal consumption as well as for market sale to others. These cases had either a lethal outcome or resulted in intestinal paresis, diplopia, accommodation paresis. Treatment consisted of the administration of antibotulin serum (type A and B) combined with transfusion of blood plasma, saline solutions, and other means of pathogenetic therapy. Bacteriological analysis of the remains of chum and pike confirmed the presence of *Cl. botulinum*. Thus, epidemiological observations indicate that the region of Khabarovsk adjoining the Amur River is unfavorable from the standpoint of botulism. The sources of this food poisoning were chum and pike, i.e. fish

Card 1/2

UDC: 616.981.553-036.24(571.62)

L 27618-66

ACC NR: AP6018418

species whose epidemiological role has not so far been satisfactorily elucidated. It must be emphasized that the danger of infection with botulism in in Khabarovsk is harbored chiefly in the consumption of home-processed (cured) fish products. [JPRS] 0

SUB CODE: 06 / SUBM DATE: 26Dec64 / ORIG REF: 002

Card 2/2 CC

SHAPIRO, S. L., G. TA. FENYAI, AND A. M. KUZIN

"The Nature of the Cholera Antigen Prepared by Digestion with Trypsin," ZhNEI, 1,
22-29, 1947

SHAPIRO, S. S.

"Catalytic dehydration of L-amino-4-hydroxybutano." Yu. K. Mur'ev, G. P., Milkhailevskii and S. Z. Shapiro. (p. 2217.1949)

SC: Journal of General Chemistry, (Zhurnal Obshchei Khimii) 1949, Vol. 19, No. 12.

ACC NR: AP7011827

SOURCE CODE: UR/0079/66/036 010 1749/1752

AUTHOR: Khomutova, Ye. D.; Shapiro, T. A.; Berezovskiy, V. M.

ORG: All-Union Vitamin Scientific Research Institute (Vsesoyuznyy nauchno-issledovatel'skiy vitaminnyy institut)

TITLE: Nucleotides, coenzymes, phosphate esters. XI. On the migration of secondary O-phosphate groups with riboflavin phosphates

SOURCE: Zhurnal obshchey khimii, v. 36, no. 10, 1966, 1749-1752

TOPIC TAGS: phosphate ester, coenzyme, phosphate, hydrolysis, vitamin

SUB CODE: 07

ABSTRACT: An effort was made to prepare riboflavin phosphate, phosphorylated on the secondary (2',3',4') hydroxyl groups, the primary hydroxyl group of riboflavin being protected with a trityl group. It was found that phosphorylation of 5'-tritylriboflavin with beta-cyanoethyl phosphate yields the corresponding substituted phosphate ester, 5'-tritylriboflavin-2',3',4'-tri(beta-cyanoethyl) phosphate. When the protective groups (trityl and beta-cyanoethyl) were removed by successive treatment with 10% acetic acid and 2N ammonia solution, the only reaction product was riboflavin-5'-phosphate, instead of the expected riboflavin-2',3',4'-triphosphate, indicating a migration of the phosphate residue from the secondary to the

UDC: 547.859:577.150.13:577.164.12

Card 1/2

ACC NR: AP7011827

primary hydroxyl group in riboflavin-2',3',4'-triphosphate and simultaneous hydrolysis of the remaining phosphoester groups at the secondary hydroxyls. The same riboflavin-5'-phosphate was the only reaction product when the protective groups were removed in the opposite sequence. Beta-cyanoethyl phosphate smoothly phosphorylates riboflavin under mild conditions, yielding riboflavin-5'-(beta-cyanoethyl) phosphate. The latter is entirely converted in acid medium to riboflavin-5'-phosphate, without any admixture of polyphosphate esters.

Orig. art. has: 1 formula. [JPRS: 40,351]

Card 2/2

FUTER, David Solomonovich; PROKHOROVICH, Yermolay Vasil'yevich; Primali
uchastiye: SHAPIRO, T.B.; NAZAROVA, E.M.; GRABOVA, F.N.; MARTINSON, A.S.,
red.; PETROVA, N.K., tekhn.red.; PRONINA, N.D., tekhn.red.

[Tubercular meningitis in children] Tuberkuleznyy meningit u
detei. Pri uchastii T.B.Shapiro, E.M.Nazarova i F.N.Grabovoi.
Moskva, Medgiz, 1963. 278 p. (MIRA 16:3)
(MENINGITIS)

SHAPIRO, T.I.

Some age characteristics of stigmal and pollen cells. Biul.
nauch.-tekhn.inform.TSGL no.2:42-45 '56. (MIRA 12:1)
(Fertilization of plants)

SHAPIRO, T.I.

Character dominance as related to the age of pollinated flowers.

Trudy TSGL 6:459-471 '57.

(MIRA 12:10)

(Hybridization, Vegetable)

USSR/Cultivated Plants - Ornamental.

M

Abs Jour : Ref Zhur Biol., No 12, 1958, 53906

Author : Shapira, T.I., Raputova, E.Ye.

Inst : -

Title : New Foreign Iris Varieties (Review)

Orig Pub : Sb. in. s.-kh. inform., 1957, No 11, 19-21

Abstract : New Hybrids are described belonging to the bearded groups of tall garden irises, the Dwarf, Siberian, Orrisroot, Japanese and Louisiana. Among the large blossomed garden irises many varieties have been noted which have pink and red coloring which is new to irises.
-- A.G. Vyatkina

Card 1/1

KOLDOBSKIY, A.G.; MEDVEDEV, S.I.; PISKOPPEL¹, F.G.; YAKOBSON, M.G. Primali uchastiye: BERKHIN, I.B.; OSLIKOVSKAYA, Ye.S.; PEREKISLOVA, A.M.; LITVIN, V.M.; PARKHOMENKO, Ye.V.; STOTIK, A.M.; SHAPIRO, T.I.; STRUMILIN, S.G., akad., glav. red.; ALEKSENKO, G.V., red.; ANISIMOV, N.I., red.; VOLODARSKIY, L.M., red.; GERSHBERG, S.R., redaktor; red.; PETROV, A.I., red.; POSVYANSKIY, S.S., red.; BAZAROVA, G.V., kand. ekonom. nauk, starshiy nauchnyy red.; KISEL'MAN, S.M., starshiy nauchnyy red.; LIVANSKAYA, F.V., kand. ekonom. nauk, starshiy nauchnyy red.; GLAGOLEV, V.S., nauchnyy red.; NEDBAYEV, V.I., nauchnyy red.; TUMANOVA, N.L., nauchnyy red.; TOVMASYAN, M.E., red.; BLAGODARSKAYA, Ye.V., mladshiy red.; SHUSTROVA, V.M., mladshiy red.; ZENTSEL'SKAYA, Ch.A., tekhn. red.

[The economic life of the U.S.S.R.; chronicle of events and facts, 1917-1959] Ekonomicheskaya zhizn' SSSR; khronika sobytii i faktov 1917-1959. Glav. red. S.G.Strumilin. Chleny red. kollegii: Aleksenko i dr. Moskva, Gos. nauchn.izd-vo "Sovetskaya entsiklopediya," 1961. 779 p. (MIRA 14:10)

1. Tsentral'naya nauchnaya sel'skokhozyaystvennaya biblioteka Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk im. Lenina (for Litvin, Parkhomenko, STOTIK, Shapiro).
(Russia--Economic conditions)

MAKARENKO, G.A.; IL'INSKAYA, V.N.; SHAPIRO, T.I., red.; PECHENKIN,
I.V., tekhn. red.

[Recent developments in agricultural research and practice;
an annotated bibliography] Novoe v sel'skokhoziaistvennoi
nauke i praktike; annotirovannyi ukazatel' literatury. Mo-
skva, Sel'khozizdat, 1962. 103 p. (MIRA 16:7)

1. Moscow. TSentral'naya nauchnaya sel'skokhozyaystvennaya
biblioteka.

(Bibliography--Agriculture)

FADYEVA, V.S., doktor tekhn. nauk; GERSHKOVICH, B.M., inzh.; SHAPIRO,
I.M., inzh.

Deformation of structural plastics in machinery and rheological in-
struments. Stroi. mat. 11 no.5:25-27 My '65. (MIRA 18:9)

RUDOY, Boris L'vovich; SHAPIRO, Teodor Mironovich; SIAROSEL'SKAYA,
M.Ya., nauchn. red.

[Production of glass fiber]Poluchenie stekliannogo volokna;
obzor inostrannykh patentov. Moskva, tsentr. nauchno-
issl. in-t patentnoy informatsii i tekhniko-ekon. issledovani
1964. 31 p. (MIRA 18:11)

AND HANUKLOVSKIY, L.A.; BUKHTEYEV, Ya.A.; VOROB'YEV, S.V.; GAYENKO,
P.A.; DOLGOV, Ye.N.; ZHUGLIN, A.A.; ZUBOVSKIY, G.P.;
TOKNOV, I.G.; KRYZHANOVSKAYA, G.L.; LISTKATOV, A.A.; LUR'YE,
E.I.; MOROZOV, N.P.; OSTROZETSER, A.S.; PAVLOV, N.A.; PETROV,
L.N.; POPOV, V.N.; TARTAKOVSKIY, I.A.; TAUBE, D.N.; KHANIN,
L.T.; SHAPIRO, TS.S.; SHVAYTSBURG, B.A.; SHEVTSOV, V.D.;
DENISENKOVA, L.M., red.

[Assembler's handbook on performing mechanical assembly and
special work on grain elevators and grain processing enter-
prises] Spravochnik montazhnika; po proizvodstvu mekhanic-
montazhnykh i spetsial'nykh rabot na elevatorakh i predpri-
yatiyakh po pererabotke zerna. Moskva, TSentr. in-t
nauchno-tekhn. informatsii i tekhniko-ekon. issl., 1963. 519 p.
(MIRA 17:7)

ACC NR: AP6033075

SOURCE CODE: UR/0218/66/031/005/1027/1032

AUTHOR: Frisman, E. V.; Shapiro, T. V.; Shchagina, L. V.; Vorob'yev, V. I.

ORG: State University im. A. A. Zhdanova (Gosudarstvennyy universitet); Institute of Cytology, Academy of Sciences, SSSR, Leningrad (Institut tsitologii AN SSSR)

TITLE: Hydrodynamic behavior of nucleic acid molecules in solutions of varying ionic strength

SOURCE: Biokhimiya, v. 31, no. 5, 1966, 1027-1032

TOPIC TAGS: nucleic acid, biochemistry, molecule behavior, physical chemistry, DNA

ABSTRACT: Characteristics viscosity and the dynamic optical constant have been measured for calf thymus DNA as functions of the ionic strength of the solution. Viscosity of native DNA markedly increases with decreasing ionic strength. The data suggest that the size and rigidity of native DNA molecules both increase with decreasing ionic strength of the solution.

SUB CODE: 06/ SUBM DATE: 25Feb66/ ORIG REF: 013/ OTH REF: 023

Card 1/1

UDC: 547.963.3

SMIRNOV, V.; SHAPIRO, V.

Using the BTO-3 paint sprayer for painting motortrucks. Avt. transp.
36 no.12:41 D '58. (MIRA 11:12)

1. Trest "Mosavtozheldor."
(Motortrucks---Painting)

VOSEKRENSKIY, M.P., zasluzhennyy vrach IEFNR (Kalinin, ul. Engel'sa, d.13);
CHAPIRO, V.A.

Surgical treatment of varicocele. Klin. khir. no.1:4-46 65.
(MIRA 18:8)

1. Kafedra fakul'tetskoy khirurgii (ispolnyushchiy obyazannosti
zaveduyushchego - dotsent N.V.Zavedovskaya) Kalininskogo meditsinskogo instituta na baze Kalininskoy oblastnoy bol'nitsy No.1.

SHAPIRO, V.A., kand.biol.nauk

Insects that prey on the gipsy moth and their importance in
plantations of the Savala Ranger District, Voronezh Province.

Trudy VIZR no.6:99-110 '54.

(MIRA 11:7)

(Gipsy moths---Diseases and pests)

USSR / General and Specialized Zoology. Insects. Harmful Insects and Acarids. Chemical Methods in the Control of Harmful Insects and Acarids. P

Abs Jour : Ref Zhur - Biol., No 18, 1958, No. 82952

Author : Shapiro, V. A.
Inst : The All-Union Institute for the Protection of Plants
Title : The Action of Insecticides on the Cotton-Plant Suctorial Pests

Orig Pub : Tr. Vses. in-ta zashchity rast., 1956, vyp. 7, 133-146

Abstract : In 1955, in the Ferganskaya Oblast, the number (N) of the parasites of the arachnids on cotton plants increased in the second half of June; that is, when the pests attained a mass reproduction. After treating the cotton plants, on 19 July, with octamethyl (0.2%), the N of arachnids, on the 3rd day, was reduced 90%; on the 10th and 20th day, they became unitary. The treatment with

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USSR/General and Specialized Zoology - Insects.

P.

Abs Jour : Ref Zhur - Biol., No 9, 1958, 40092

Author : Shapiro, V.A., Kamenkova, K.B.

Inst : -

Title : The Preservation of the Parasites of the Gypsy Moth in Chemical Treatments.

Orig Pub : Lesn. kh-vo, 1956, No 12, 43-45.

Abstract : Chemical treatments in the early spring, which cease not later than the appearance of the larvae of the second hatching of the silkworm, are most effective against the pest but do no harm to the greatest part of the parasites still in their hibernation localities. Decrease in the numbers of the host leads to an increase in the effectiveness of the parasites. Since the parasites are preserved it is possible to carry on the chemical treatments selectively. The parasites successfully concentrate in neglected sections and suppress the pest, at the expense of

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Abs Jour : Ref Zhur - Biol., No 9, 1958, 40092

SHAPIRO, V.A.

Main parasites of the gypsy moth (*Porthetria dispar* L.) and prospects of their utilization [English summary in insert]. *Zool.zhur.* 35 no.2:251-265 F '56. (MIRA 9:7)

1.Vsesoyuznyy nauchno-issledovatel'skiy institut zashchity rasteniy.
(Parasites--Gypsy moth)

USSR/General and Systematic Zoology. Insects. Harmful P
Insects and Acardis. Forest Pests.

Abs Jour : Ref Zhur - Biol., No 3, 1959, No 11640

Author : Shapiro, V.A., Kamenkova, K.V.
Inst : All-Union Institute for the Protection of Plants
Title : Concerning the Feasibility of Combining DDT
Chemical Treatments with the Activity of Parasites
in the Control of a Vernal Group of Harmful
Butterflies on Forest Plantations.

Orig Pub : Tr. Vses. in-ta zashchity rast., 1957,8, 99-114.

Abstract : According to investigations of the forest belts
of the Kamennaya Steppe, it is possible to combine
the activity of parasites with the chemical con-
trol of the Gypsy Moth (M) and other leaf-mining
pests. The treatment should be conducted prior
to the transition of the M caterpillars into the

Card : 1/3

- 30 -

USSR/General and Systematic Zoology. Insects. Harmful
Insects and Acarids. Forest Pests.

P

Abs Jour : Ref Zhur - Biol., No 3, 1959, No 11640

latter, it is recommended to employ incomplete
treatments of the plantations. Parasitic insects,
especially flies, concentrate on untreated dis-
tricts overwhelm the pests, and accumulate.
Bibliography of 28 titles.

Card : 3/3

- 31 -

COUNTRY : USSR
 CATEGORY : ENTOMOLOGICAL
 ABS. JOUR : Izvestiya Akademii Nauk SSSR, Seriya Biologiya, No. 4, 1959, No. 1487
 AUTHOR : Shapiro, V.
 INST. :
 TITLE : The effect of the grain loss in Kazakh-
 1959.

ORIG. PUB. Vesta. zh. kh. nauk, 1958, No. 5, 47-51

ABSTRACT : A follow-up in Kazakhstan. Pollut from Jan-
 uary 19th - 22th revealed that caterpillars
 (C) under threat of falling were 16-fold less
 than under the untreated. In a field where
 the machine was accompanied by means of in-
 medium combine harvesting and was seen from
 Jan 20th - 22th, C was 4.4-fold less than of
 a field of the same variety of seedling where
 up to 100 of untreated pollina remained with
 separate variety. In the presence of the

CARD: 1/3

01.0.1.1 :
 01.0.1.1 : GENERAL&SPEC.ZOOLOGY,INSECT:

01.0.1.1 : Ref Zhur-Biologiya, No.4 , 1959, No.16973

Author :
 Title :
 Title :

ORIG. PUB.:

ABSTRACT : Moths 1/2 of 1 found in the grain were de-
 stroyed; but on 1 kg of grain there were 2-3 C
 left. On fields visited on April 29, May 4,
 May 8 - 12, and May 20 - 25 there were corre-
 spondingly 1.0, 7.1, and 5.2 of 1 m². A later
 period of mowing favored greater extinction by
 starvation of hibernating C and decreased the
 fertility of the surviving members. With
 later passage of the corn into the earing
 stage the butterflies laid fewer eggs. Fall

CARD : 2/3

SHAPIRO, V.A., kand.biologicheskikh nauk

Role of parasites in reducing the numbers of the lackey moth.
Trudy VIZR no.15:71-86 '60. (MIRA 14:3)
(Tent caterpillars--Biological control)

L 54986-65 EWT(1)/FCC/EEC(t) Po-4/P1-4 GW
ACCESSION NR: AP5010283 UR/0203/65/005/002/0369/0371
550.385

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21
B

AUTHOR: Panov, T. N., Shapiro, V. A.

TITLE: Comparison of determinations of the full vector modulus T according to absolute observations of field elements at the Vysokaya Dubrava Observatory with data of the PM-1 proton magnetometer

SOURCE: Geomagnetizm i aeronomiya, v. 5, no. 2, 1965, 369-371

TOPIC TAGS: proton geomagnetometer, terrestrial magnetism, geomagnetic field, full vector modulus, magnetic field measurement, proton precession

ABSTRACT: The determination of the T modulus by means of the PM-1 proton magnetometer is described. PM-1 magnetometer No. 31 has been in operation at the Vysokaya Dubrava Observatory since 4 January, 1963. The determination of a magnetic field by means of precision proton magnetometers is shown to resolve itself to the measurement of the free precession frequency of the protons. In the case under consideration, this frequency was determined by comparison with the frequency of a crystal-controlled oscillator and with the beat recording of a standard frequency and the proton precession frequency on 35-mm movie film with the help of a loop oscilloscope. In this way, 145 T determinations were made during 1963. In addition, 102 determinations were made with an electron-

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ACCESSION NR: AP5010283

metering frequency meter. The modifications made in the automatic control unit of the PM-1 magnetometer for this purpose are described in the article. An analysis is given of a series of tests conducted for the purpose of comparing data on frequency determination obtained with the standard PM-1 device and with the counting frequency meter. In October of 1963, 10 pairs of T observations were conducted with the frequency meter in such a way as to have one observation of the pair cover approximately the maximum, the other - the minimum, of the daily variation of the T vector. These observations made it possible to compare the T variations, as measured by the proton magnetometer, with those computed on the basis of readings made at the observatory. The results of this comparison are given in a table. The variation values show good agreement. The authors discuss a comparison of T modulus values according to PM-1 readings and according to the results of absolute observations. In 1963, using the proton magnetometer, 247 T observations were made. Differences were found between the T_p (PM-1 readings) and T_c (the T value computed according to magnetograms and other absolute instruments of the observatory) values. Numerical values for these differences are given and analyzed in the article. Three possible causes for this discrepancy are considered in detail: 1) errors in the proton magnetometer, 2) errors in the observatory instruments, 3) erroneous values in the reduction correction factors. The last mentioned factor is found to be the probable cause of the

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discrepancy. As a result of their study, the authors conclude that precision proton magnetometers should be introduced into observatory work as soon as possible, so that it will be possible to measure not only the modulus T but also the absolute values of the fundamental magnetic elements (H, Z, D. I). For this purpose, the magnetometer must be equipped with a system of high-precision Helmholtz rings. Experimental devices of this type have already been developed. "In conclusion, the authors express their gratitude to N. A. Ivanov for his constant support and assistance during all stages of the work." Orig. art. has: 2 tables and 2 formulas.

ASSOCIATION: Institut geofiziki UFAN SSSR (Institute of Geophysics, UFAN SSSR)

SUBMITTED: 08Jun64

ENCL: 00

SUB CODE: EM, ES

NO REF SOV: 004

OTHER: 007

Card 3/3

SHAPIRO, V.A.

Characteristics of the remnant magnetism in the magnetites of the
Pokrovsk-Ural'sk deposit. Trudy Inst.geofiz.UFAN SSSR no.3:61-64
'65. (MIRA 18:8)

CHAPERO, ...

Formation of the parasitic fauna of the cutworm *Agrotis segetum*
Berk. in the wheat fields of the virgin lands of Kazakhstan.
Trudy Vses. ent. ob-va 50:193-217 '66. (MIRA 12:5)

L 09146-67 EWT(1)/FCC GW
ACC NR: AP7002759

SOURCE CODE: UR/0387/66/000/008/0061/0073

AUTHOR: Shapiro, V. A.

ORG: Ural'sk. Branch, Institute of Geophysics, AN SSSR (Ural'skiy filial, Institut geofiziki AN SSSR)

TITLE: Seismomagnetic effect

SOURCE: AN SSSR. Izvestiya, Fizika zemli, no. 8, 1966, 61-73

TOPIC TAGS: magnetostriction, piezomagnetic effect, earthquake, seismology, geomagnetic field, earth crust

ABSTRACT: In this article, on the basis of data in the literature on laboratory study of magnetostriction, piezomagnetic properties, and the dynamic magnetization of rocks and ores, using the results of the magnetic effect of earthquakes and with a review of theoretical studies, an attempt is made to give an overall picture of the present status of the seismomagnetic effect (57 references are cited). Study of this effect makes possible measurement of a number of properties of rocks at considerable depths where direct investigations are impossible. These manifested particularly well in seismically active regions. Systematic investigations of geomagnetic field variations in seismic regions, along faults and in areas of pronounced movements of rocks, can facilitate determination of the probable places of future earthquakes. The seismomagnetic effect may be usable as one of the indicators of the appearance and change of stress in the earth's crust, thereby aiding in

Cont 1/2

UDC: 550.382.3:550.34

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L 09146-67

ACC NR: AP7002759

earthquake prediction. Study of the seismomagnetic effect is of great importance for study of the secular variation of the geomagnetic field; there is an obvious relationship between seismomagnetic effects and anomalies of secular variation. The author thanks N. A. Ivanov and B. A. Undzenkov for advice in the discussions of the article. Orig. art. has: 8 figures. [JPRS: 38,230]

SUB CODE: 08,20 / SUBM DATE: 01Dec65 / ORIG REF: 019 / OTH REF: 038

Card 2/2 nst

MEL'KANGVITSKIY, I.M.; SHAPIRO, V.B.

Averaging gravity anomalies from two-dimensional bodies. Uch. zap.
SAIGIMSa no.7:283-286 '62. (MIRA 17:2)

1. Sredneaziatskiy nauchno-issledovatel'skiy institut geologii i mineral'nogo syr'ya, Tashkent.

33203

S/141/61/004/005/005/021
E032/E514

9.9845
24.6716

AUTHOR

Shapiro, V.D.

TITLE

On the effect of electrostatic instabilities on the
electrical conductivity and temperature of plasma

PERIODICAL

Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika.
v. 4, no. 5, 867-874

TEXT

The author reports a detailed study of the electrical conductivity of plasma in strong electric fields. The analysis is based on the transport equation without the collision integral. It is shown that the collisionless dissipation of energy of plasma waves excited by an electron beam gives rise to a rapid increase in the thermal energy of the plasma particles. The basic set of equations for the problem is the Boltzmann-Vlasov set for plasma electrons and ions:

$$\frac{\partial f_i}{\partial t} + v \frac{\partial f_i}{\partial r} + \frac{e}{m_i} (E_0 + E_1) \frac{\partial f_i}{\partial v} = 0 \quad (1)$$

and the Poisson equation for the electric field of the oscillations

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on the effect of electrostatic

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S/141/61/004/005/005/0021
E052/E514

$$\text{div } E_1 = 4\pi e \left\{ \int f^+ (dv) - \int f^- (dv) \right\} \quad (1a)$$

The electron and ion distribution functions are given by $f^+ = f_o^+ + f_1^+$ where the second term represents plasma oscillations and its average value is zero. The functions $f_o^\pm$ obey the following equations:

$$\frac{\partial f_o^+}{\partial t} + \frac{e}{m_-} E_o \frac{\partial f_o^+}{\partial v} = \frac{e}{m_-} \left\langle E_1 \frac{\partial f_1^+}{\partial v} \right\rangle = 0 \quad (1b)$$

It is then assumed that the oscillations are linear and that the time variation of $f_o^\pm$ is much slower than that of $f_1^\pm$. Assuming that

$$E_1 = \sum_k E_k \exp \left\{ i \left(kr - \int_0^t \omega_k d\tau \right) \right\},$$

$$f_1 = \sum_k f_k \exp \left\{ i \left(kr - \int_0^t \omega_k d\tau \right) \right\}$$

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33203

On the effect of electrostatic ...

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EO 32/1514

it is shown that

$$\frac{\partial f_0^-}{\partial t} = \frac{\partial}{\partial w} (v^- f_0^-) + \frac{1}{2} \frac{\partial^2}{\partial w_i \partial w_k} (v_i^- v_k^- f_0^-)$$

in which $v^- = \Delta w^- / \Delta t$, where Δw^- is the average change in the particle velocity as a result of "collective collisions" during the time interval Δt . This equation is similar in form to the Fokker-Planck equation. The equation is solved for f_0^- and an analysis of the solution shows that when a strong electric field is introduced, the plasma electrons are accelerated by it and form a beam which excites longitudinal plasma oscillations. The electron beam is then retarded as a result of the interaction with the collective plasma oscillations and an increase in the thermal energy of the plasma particles due to the thermalization of the oscillations. Acknowledgments are expressed to Ya. B. Faynberg who directed this work. There are 7 references - 3 Soviet-bloc and 4 non-Soviet-bloc. The English-language

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on the effect of electrostatic ...

33203

S/141/61/004/005/005/004
E032/E514

references read as follows: Ref.1: H. Dreicer, Phys. Rev., 115, 238 (1959); Ref.3: D. Bohm, E.P. Gross, Phys. Rev., 75, 1851 (1949).
Ref.4: O. Buneman, Phys. Rev., 115, 503 (1959); Ref.6: D. Gabor, Proc. Roy. Soc., 213, 75 (1952). This paper was presented at the conference of MV and SSO USSR on Radioelectronics, Khar'kov 1960.

S/185/61/006/003/010/010
D208/D302

AUTHOR: Shapiro, V.D.

TITLE: Effect of electrostatic instabilities on the electrical conductivity and temperature of a plasma

PERIODICAL: Ukrayins'kyy fizychnyy zhurnal, v. 6, no. 3, 1961, 426-429

TEXT: This article was read originally at the All-Union Radio-electronics Conference in the Autumn of 1960. The electrical conductivity of a plasma in a strong electric field is investigated on the basis of the kinematic equation without collision integral. In this approximation, the time dependence of the momentum of a rectified electron-beam and the thermal energy of electrons can be determined. It is shown that the energy-dissipation (without collisions) of plasma oscillations excited by an electron beam leads to a rapid increase in thermal energy of the plasma. The distribution functions of electrons and ions can be expressed by

$$f^{\pm}(t, r, v) = f_0^{\pm}(t, v) + f_1^{\pm}(t, r, v) .$$

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Effect of electrostatic instabilities... S/185/61/006/003/010/010
D208/D302

By the method of successive approximations we obtain

$$\begin{aligned} f_0^-(t, w) &= \frac{N_e m_e^{1/2}}{(8\pi^2 \theta_1^2 \theta_1)^{1/2}} \exp \left\{ -\frac{m_- (w_x^2 + w_y^2)}{2\theta_1(t)} - \frac{m_- w_z^2}{2\theta_1(t)} \right\} \times \\ &\times \left\{ 1 - \xi \frac{m_-}{\theta_1} w_z + \eta \frac{m_- \theta_0}{\theta_1 \theta_1} w_x \left(1 - \frac{m_- (w_x^2 + w_y^2)}{2\theta_1} \right) + \right. \\ &\quad \left. + \zeta \frac{m_- \theta_0}{\theta_1^2} w_x \left(\frac{3}{2} - \frac{m_- w_z^2}{2\theta_1} \right) \right\}; \\ \theta_1(t) &= \theta_0 \left\{ 1 + \frac{2}{\pi^2} \int_0^t d\tau \int dk \frac{k_x^2}{k^4} \frac{e^2 \exp \left\{ 2 \int_0^\tau \delta_{\mathbf{m}}(\tau') d\tau' \right\}}{m_- \{ (k_x u_0 - \omega_{\mathbf{m}})^2 + \delta_{\mathbf{m}}^2 \}} \right\}; \\ \theta_1(t) &= \theta_0 \left\{ 1 + \frac{2}{\pi^2} \int_0^t d\tau \int dk \frac{k_x^2}{k^4} \frac{e^2 \exp \left\{ 2 \int_0^\tau \delta_{\mathbf{m}}(\tau') d\tau' \right\}}{m_- \{ (k_x u_0 - \omega_{\mathbf{m}})^2 + \delta_{\mathbf{m}}^2 \}} \right\}; \end{aligned} \quad (6)$$

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0208/D302

$$\begin{aligned}\xi(t) &= \frac{2}{\pi^2} \int_0^t d\tau \int dk \cdot k_z \frac{e^i \theta_s (k_z u_0^- - \omega_R^r) \exp \left\{ 2 \int_0^\tau \partial_k (\tau') d\tau' \right\}}{m_-^2 \{ (k_z u_0^- - \omega_R^r)^2 + \partial_k^2 \}^2}; \\ \eta(t) &= \frac{4}{\pi^2} \int_0^t d\tau \int dk \frac{k_z k_x^2}{k^2} \frac{e^i \theta_i (z) (k_z u_0^- - \omega_R^r) \exp \left\{ 2 \int_0^\tau \partial_k (\tau') d\tau' \right\}}{m_-^2 \{ (k_z u_0^- - \omega_R^r)^2 + \partial_k^2 \}^2}; \\ \zeta(t) &= \frac{4}{\pi^2} \int_0^t d\tau \int dk \frac{k_z^3}{k^2} \frac{e^i \theta_i (z) (k_z u_0^- - \omega_R^r) \exp \left\{ 2 \int_0^\tau \partial_k (\tau') d\tau' \right\}}{m_-^2 \{ (k_z u_0^- - \omega_R^r)^2 + \partial_k^2 \}^2}.\end{aligned}\quad (6')$$

From (6') one obtains for the transverse and longitudinal temperatures $\theta_\perp$ and $\theta_\parallel$:

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Effect of electrostatic instabilities... S/185/61/006/003/010/010
D208/D302

$$\begin{aligned}\theta_{\perp}(t) &= \frac{\theta_0}{2} \{1 - \gamma + \sqrt{(1 - \gamma)^2 + 4\delta}\}; \\ \theta_{\parallel}(t) &= \theta_0 \{1 + 2\gamma\}; \\ \delta &= \frac{1.4}{\pi^{1/2}} \cdot \frac{E_D}{E_0} \cdot \frac{e^2 e^{\tau}}{\tau^{1/2}}; \quad \gamma = 18\pi^{1/2} \left(\frac{E_q}{E_0}\right)^2 \frac{e^2 e^{\tau}}{\tau^{1/2}} \ln \left\{1 + \frac{m_- u_0^2}{3\pi^2 \theta_0}\right\};\end{aligned}\quad (7)$$

$$\begin{cases} E_D = \frac{e}{\lambda_D^2}; & E_q = e N_0^{1/2}; & \tau = \sqrt{\frac{4\pi N_0 e^2}{m_-}} t; \\ \alpha_e = 0.049 \end{cases}$$

For the rectified momentum of an electron beam:

$$\begin{aligned}\frac{dP_{ez}}{dt} &= -e E_0 N_0 \left\{1 - \frac{1.4}{\pi^{1/2}} \frac{e_0}{\theta_{\perp}(t)} \left(\frac{E_q}{E_0}\right)^2 \frac{e^2 e^{\tau}}{\tau^{1/2}}\right\}; \\ \alpha_e \tau &\gg 1.\end{aligned}\quad (7')$$

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Effect of electrostatic interaction

003/003/010/010
0230/1302

By means of Eq. (7) it can be shown that the loss in momentum during the time t_1 is small compared to $P_0 = \epsilon_1 \frac{2}{\omega \epsilon_1} P_0$, i.e.,

$P_1(t \rightarrow t) \ll P_0$. Hence the oscillation energy of a plasma at $t \rightarrow t_1$ is still small as compared to the energy of the rectified beam path and therefore the oscillations remain linear. At $t \rightarrow t_1$ the bunching of the current and the increase in temperature take place much slower than should be expected from Eq. (7) and (7'), this is due to the fact that as a result of the increase in effective temperature, the linear increment of oscillation γ decreases (for $\omega_p \rightarrow |\omega_0|$, $\gamma \rightarrow 0$), and that the oscillations become non-linear at large t . The author thanks Ya. B. Fainberg for his assistance. There are 4 references: 2 Soviet bloc and 2 non-Soviet bloc. The references to the English-language publications read as follows: D. Gabor, Proc. Roy. Soc., 213, 75, 1952; G. Buneman, Phys. Rev., 115, 503, 1959.

ASSOCIATION Fizyko-tekhnicheskyy Institut AN USSR (Physicotechnical Institute of the USSR) Khar'kov

SUBMITTED February 27, 1961

Card 5/5

42763

S/185/62/007/010/001/020
D234/D308

14 6/14

AUTHOR: Shapiro, V. D.

TITLE: Diffusion in the inhomogeneous rarefied plasma, caused by excitation of 'ion-acoustic' oscillations

PERIODICAL: Ukrayins'kyi fizychnyy zhurnal, v. 7, no. 10, 1961, 1033-1043

TEXT: Using quasilinear theory the author estimates the diffusion coefficient. High temperature plasma without paired collisions is considered, the magnetic field having the z direction and all plasma parameters depending on x only. A solution of the kinetic equation having an accuracy up to terms of the first order in $1/H_0$ is quoted from papers by L. I. Rudakov and R. Z. Sagdeyev. Expressions are deduced for the current density and for the oscillation amplitudes. Accurate determination of the diffusion coefficient for stationary oscillations is complicated. The order of magnitude of ion diffusion coefficient due to the above oscillation is found to be

Card 1/2

diffusion in the ...

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D234/D308

$$\frac{c^2 n_0 T_e}{n_0^2} (m^e/m^i)^{5/2} \bar{\xi}/\omega_{0e} \quad (38)$$

where m^e , m^i are the electron and ion masses, $\bar{\xi} = u_0/c_s$, u_0 is the average electron velocity, $c_s = \sqrt{T_e/m^i}$. Numerical values of the diffusion coefficient for a stellarator are computed and it is concluded that the experimental anomaly cannot be due to 'ion-acoustic' oscillations. The author thanks Ya. B. Paynberg for guidance and O. I. Akhryev for discussion.

ASSOCIATION: Fizyko-tekhnichnyy instytut AN URSR, m. Kharkiv (Physicotechnical Institute, AS UkrSSR, Kharkiv)

SUBMITTED: April 4, 1982

Card 2/2

FAYNBERG, Ya.E.; Prinimali uchastiye: KURILKO, V.I.; KHARCHENKO, I.F.;
SHAPIRO, V.D.

Interaction between beams of charged particles and a plasma. Atom.
energ. 11 no.4:313-335 0 '61. (MIRA 14:9)
(Particles (Nuclear physics)) (Plasma (Ionized gases))

26.2331

24.2120 (3717)

22772

S/057/61/031/005/003/020

3104/3205

AUTHOR: Shapiro, V. D.

TITLE: Conductivity of plasma in a strong electric field

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 5, 1961, 522-528

TEXT: A study has been made of the moderation of a beam of "outgoing" electrons which were produced by interaction with collective plasma oscillations under the action of an external electric field ($E_0 > E_{cr}$). E_{cr} is the electric field in which the directed velocity attained by the electrons in the mean free path time is equal to their mean thermal velocity. The author has studied the conductivity of plasma in strong fields, taking account of the moderation of "outgoing" electrons. He proceeds from the Boltzmann-Vlasov equation

$$\frac{\partial f^{e,i}}{\partial t} + \mathbf{v} \cdot \frac{\partial f^{e,i}}{\partial \mathbf{r}} - \frac{e}{m^{e,i}} (\mathbf{E}_0 + \mathbf{E}_1) \cdot \frac{\partial f^{e,i}}{\partial \mathbf{v}} = 0 \quad (1)$$

for electrons and ions of the plasma and from the equation

$$\text{div } \mathbf{E}_1 = 4\pi e \left\{ \int f^e d\mathbf{v} - \int f^i d\mathbf{v} \right\}, \quad (2)$$

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22772

S/057/61/C31/005/003/020
B104/B205

Conductivity of...

$\vec{E}_0$ is the external homogeneous electric field in the direction of the x-axis; $\vec{E}_1$ is the electric field of plasma oscillations, which can be represented by

$$E_1(t, r) = \sum_k \{ \varepsilon_k(t) \cos kr + \varepsilon'_k(t) \sin kr \}, \quad (A)$$

f^i and f^e are the distribution functions of ions and electrons in the plasma. It is shown that $\frac{d}{dt} \frac{p_i^e}{m_i} = \text{const}$, and the momenta of electrons and ions in the plasma are given by the differential equation

$$\frac{dP_0^e}{dt} = -en_0 E_0 + \langle n_1^e E_1 \rangle; \quad n_1^e = \int f_1^e dv. \quad (4)$$

The investigation of plasma oscillations is based on the system

$$\left. \begin{aligned} \frac{dn_1^e}{dt} + \frac{\partial}{\partial x_k} \{ (n_0 + n_1^e) (u_{0k}^e + W_k^e) \} &= 0, \\ \frac{dW_k^e}{dt} + \left\{ (W_k^e - u_{0k}^e) \frac{\partial}{\partial x_k} \right\} W_k^e &= - \frac{e}{m^e} E_1. \end{aligned} \right\} \quad (5)$$

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for electrons and on an analogous system for ions. These systems along with (2) are analyzed on the assumption that $\epsilon = eE_0/m\omega_0 u_{0e}$ is small (linear oscillations). Neglecting thermal motion one obtains the dispersion relation

$$k_z u_{0e} = \mp \omega_0 \left\{ 1 + \mu^{1/2} \frac{3 \cos^2 \theta - \sin^2 \theta}{2 \cos^{1/2} \theta} \right\}; \quad \begin{matrix} - \text{при } k_z > 0, \\ + \text{при } k_z < 0; \end{matrix} \quad (7)$$

$$p = \mp \omega_0 \mu^{1/2} \cos^{1/2} \theta e^{\mp i \theta}.$$

which yields the following expression for $|p| \leq \omega_0 \mu^{1/2}$ and $\delta > 0$:

$$p = \frac{k_z u_{0e}}{\sqrt{1 - \frac{k_z^2 u_{0e}^2}{\omega_0^2}}} \left\{ \mp i \sqrt{\mu} + \mu \frac{(k_z u_{0e})^2 \left[2 - \left(\frac{k_z u_{0e}}{\omega_0} \right)^2 \right]}{\omega_0^2 \left[1 - \left(\frac{k_z u_{0e}}{\omega_0} \right)^2 \right]^{1/2}} \right\}. \quad (8)$$

If the thermal velocity dispersion of the plasma particles is taken into account, the dispersion relation will acquire the form

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$$\frac{\omega_0^2}{(\omega - k_x u_0)^2 - k_x^2 v_T^2} + \mu \frac{\omega_0^2}{(\omega + \mu k_x u_0)^2 - k_x^2 v_T^2} = 1. \quad (9)$$

An analysis of (9) indicates that instabilities will appear with $|u_0| > v_T^2$. In the following, the author confines himself to $|u_0| \gg v_T^e$, i.e., $t \gg E_{cr}/vE_0$. It follows from (7) and (8) that $|k_x u_0| \ll |p| \ll |k_x u_0|$. Thus, the following relation is obtained for a given $\vec{k}$:

$$\left. \begin{aligned} n_1' &= n_0 \frac{k}{k_z} \left\{ \frac{2\delta\omega_0}{(k_x u_0)^2} \cos \psi + \frac{\omega_0 k_z u_0}{(k_x u_0 - \omega)^2} \sin \psi \right\}, \\ n_1' &= n_0 \frac{k}{k_z} \left\{ \frac{2\delta\omega k_x u_0 \omega_0}{(\omega^2 + \delta^2)^2} \cos \psi + \mu \frac{\omega^2 - \delta^2}{(\omega^2 + \delta^2)^2} k_x u_0' \sin \psi \right\}, \\ \psi &= kr - \int_0^t \omega(k, t') dt'. \end{aligned} \right\} \quad (10)$$

The symmetry of all directions lying in the plane perpendicular to the x-axis shows that the moderating forces, $\vec{F}^e$, acting upon the electron beam

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as a result of its interaction with collective oscillations, and also E_0 lie in the direction of the x-axis. If the initial amplitude of each oscillation in the respective volume of the k -space is determined from the condition $V E_k^2 / 8\pi = \kappa T$ (E_k^0 is the initial amplitude of the electric field of oscillations; T is the plasma temperature), then the x-component of the electric pulse in reduced parameters can be given as

$$\frac{dP_{0x}^e}{dt} = -en_0 E_0 \left\{ 1 - \mu \frac{64\pi (2\pi)^{1/2}}{|a''(y^e)|^{1/2}} \left(\frac{E_0}{E_0} \right)^3 \times \right. \\ \left. \times \frac{1}{y^e} \frac{x_r^e x_i^e}{(x_r^{e2} + x_i^{e2})^2} \left[\frac{y^{e2}}{(y^e - x_r^e)^2} + \frac{x_r^{e2} - x_i^{e2}}{x_r^e y^e} \right] \frac{e^{\alpha(y^e)}}{\tau^{1/2}} \right\}. \quad (13)$$

where $y = -k_x x_0^e / \omega_0$, $-\omega / \omega_0 = x_r$, $\delta / \omega_0 = x_i$, $\tau = \omega_0^{-1}$, $\alpha(y) = \frac{2}{y} \int_0^y x_i(y') dy'$; y^e is determined from the equations $\alpha'(y^e) = 0$, $x_r^e = x_r(y^e)$, and $x_i^e = x_i(y^e)$.

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(15) is applicable if $\alpha(y_e)\tau \gg 1$. An approximate integration of (15) for $\alpha\tau \gg 1$ yields

$$P_{0z} = -\frac{en_0E_0}{\omega_0} \left\{ \tau - \frac{1}{2} 0.2\pi^{1/2} \left(\frac{E_0}{E_0} \right)^3 \frac{e^{\alpha\tau}}{\alpha\tau^{1/2}} \left[1 + \frac{5}{2\alpha\tau} + \dots \right] \right\}; \quad (15)$$

$1/\alpha \ll \tau \leq \tau_e$, τ_e is obtained from (16). The maximum pulse of the electron current is attained at t_e . This value is found from

$$1 = 0.2\pi^{1/2} \frac{1}{\omega_0} \left(\frac{E_0}{E_0} \right)^3 \frac{e^{\alpha\tau_e}}{\tau_e^{1/2}}. \quad (16)$$

The maximum electron momentum is obtained from

$$P_{0z} = -\frac{en_0E_0}{\omega_0} \left\{ \tau_e - \frac{1}{2} \left(1 + \frac{5}{2\alpha\tau_e} \right) \right\} \approx -en_0E_0t_e, \quad (B)$$

and the corresponding maximum conductivity from

$$\sigma_{\max} \approx \frac{\omega_n^2}{4\pi} t_e. \quad (C)$$

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Finally, the energy loss of the electron beam due to interaction is calculated. Ya. B. Faynberg is thanked for suggesting the topic, and A. I. Akhiezer for a discussion. There are 5 references: 2 Soviet-bloc and 3 non-Soviet-bloc. The two references to English-language publications read as follows: H. Dreicer, Phys. Rev., 115, 238, 1959; D. Bohm, E. P. Gross, Phys. Rev., 70, 1801, 1949. X

ASSOCIATION: Fiziko-tekhnicheskiy institut AN.USSR Khar'kov (Institute of Physics and Technology, AS UkrSSR, Khar'kov)

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24.2120 (3717, 3817, 1538)

AUTHORS: Faynberg, Ya. B., Kurilko, V. I., Shapiro, V. D.

TITLE: The character of instabilities in the interaction between charged particle beams and plasma

PERIODICAL: Zhurnal tekhnicheskoy fiziki, v. 31, no. 6, 1961, 633-639

TEXT: The problem of convective and absolute instabilities is treated by the method of L. D. Landau and Ye. M. Lifshits (Mekhanika sploshnykh sred. GIITL, 1954). In papers by A. I. Akhiezer, Ya. B. Faynberg (DAN SSSR, 64, 555, 1949; ZhETF, 21, 1262, 1951), D. Bohn, E. Gross (Phys. Rev., 75, 1851, 1949), and G. I. Budker (Atomnaya energiya, I, 5, 1956), the solution of equations for small vibrations was formulated in the form

$$\varphi(\vec{r}, t) = \varphi(y, z)e^{i(kx - \omega t)} \quad (1)$$

with the criterion of instability for the existence of complex roots of the dispersion relation $\phi(k, \omega) = 0$. The question as to the character of the occurring instabilities remains, however, unsolved. According to Landau and Lifshits, a distinction should be made between convective and

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absolute instabilities; in this connection, the behavior of the integral

$$\int_{-\infty}^{+\infty} \exp\{-i\omega(k)t\} dk \quad (4)$$

plays the decisive role. The study of this integral by the method of Landau and Lifshits, which, for several reasons, is better than that of P. A. Sturrock (Phys. Rev., 112, 1488, 1958), must be carried out for all parts $\omega_{\alpha}(k)$ of the dispersion relation; for this purpose, the path of integration of (4) is changed according to Fig. 1. The curve C in the ω -plane (Fig. 2) with the integral

$$\int_C e^{-i\omega t} \frac{d\omega}{dk} \quad (5)$$

corresponds to this path of integration. Points of type ω_1^* do not lie on the examined sheet of the $\omega(k)$ plane; points of type ω_2^* make no contribution; consequently, (5) takes the form $\int_{\omega_3} e^{-i\omega t} \frac{d\omega}{dk}$, (I). If $t \rightarrow \infty$, only

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the range $\omega \sim \omega_3^*$ remains; hence,

$$\left. \begin{aligned} \frac{d\omega}{dk} &\simeq \left[2 \frac{d^2\omega}{dk^2} \Big|_{\omega_3} (\omega - \omega_3^*) \right]^{1/2}, \\ \int_{\omega_3}^{\omega} e^{-i\omega t} \frac{d\omega}{dk} &= \frac{2e^{-i\omega_3 t}}{\left[2i - \frac{d^2\omega}{dk^2} \Big|_{\omega_3} \right]^{1/2}} \int_0^{\infty} e^{-zt} \frac{dz}{\sqrt{z}} = \frac{e^{-i\omega_3 t}}{\left[\frac{i}{2\pi} \frac{d^2\omega}{dk^2} \Big|_{\omega_3} \right]^{1/2}}. \end{aligned} \right\} \quad (6)$$

All other $\omega(k)$ are treated in the same way. Then, a cold plasma (density n_0) interacting with a monoenergetic electron beam of density n_1 and velocity V_1 is considered. After introduction of the usual frictional force $m\nu_{\text{eff}}\vec{v}$ ($\nu > 0$), the dispersion relation acquires the form

$$\frac{1}{X(X+iv)} + \frac{\alpha}{(X-Y)(X-Y+iv)} = 1, \quad (\text{II})$$

$$X = \frac{\omega}{\omega_0}; \quad Y = \frac{kV_1}{\omega_0}; \quad \nu = \frac{\nu_{\text{eff}}}{\omega_0}; \quad \alpha = \frac{n_1}{n_0}; \quad \omega_{0,1}^2 = \frac{4\pi e^2}{m} n_{0,1}.$$

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The points to be surrounded are determined by

$$\begin{aligned} Y_{\text{per}}^+ &= + \frac{i\nu}{2} \left[\frac{1 + \alpha - \frac{\nu^2}{4}}{\alpha - \frac{\nu^2}{4}} \right]^{1/2} \\ X_{\text{per}}^+ &= - i\nu \left[\frac{1 + \alpha - \frac{\nu^2}{4}}{\alpha - \frac{\nu^2}{4}} \right]^{1/2} \end{aligned} \quad (\text{III})$$

(Fig. 3). The points X_{per}^+ , which, together with (6), might lead to an exponential increase of perturbation with time, are meaningless (type ω_2^*); here and also in the case $\nu < 0$ the instability is convective (Tak mechanism). At plasma temperatures other than zero, the dispersion relation with the usual notation and simplifying assumptions reads

$$\frac{1}{X^2 - \beta^2 Y^2} + \frac{\alpha}{(X - Y)^2} = 1, \quad (7);$$

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$\beta V_1 = V_*$; $\alpha n_0 = n_1$; $\omega_0 X = \omega$; $\omega_0 Y = k V_1$.

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if $\beta^2 \ll \alpha \ll 1$, one has

$$X_{\text{per}} = - \left\{ 1 + 2\beta\alpha^{1/2} e^{i\pi m} + 2\beta^{3/2} \alpha^{1/4} e^{\frac{i\pi}{2} m} \right\} \quad m = 0, 1, 2, 3.$$

$$Y_{\text{per}} = - \left\{ \alpha^{1/4} e^{\frac{i\pi}{2} m} + \frac{3}{4} \beta^{1/2} + \frac{3}{32} \frac{\beta}{\alpha^{1/4}} e^{-\frac{i\pi}{2} m} \right\} \quad (\text{IV}),$$

which again results in a convective instability. Small vibrations in a system consisting of two oppositely directed beams of charged particles, are described by the following dispersion relation:

$$\frac{\omega_1^2}{(\omega - kV_1)^2} + \frac{\omega_2^2}{(\omega + kV_2)^2} = 1, \quad \omega_{1,2}^2 = \frac{4\pi^2}{m} n_{1,2}, \quad (\text{VII}),$$

where $n_{1,2}$ and $V_{1,2}$ denote the density and velocity of the beams. On the assumption that $V_1 = V_2$ and $n_1 = n_2$, it can be seen that if $t \rightarrow \infty$, (4) increases as $\frac{\exp(\omega_0 t/2)}{Vt}$ (non-convective case). The instability is also

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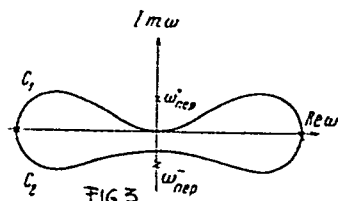
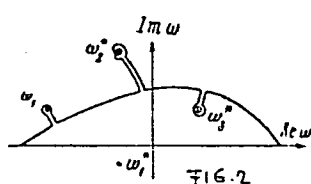
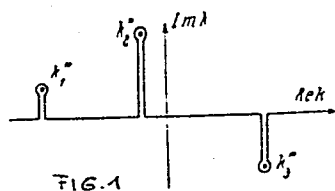
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non-convective if $n_1 = n_2$, $V_1 - V_2 = \delta(V_1 + V_2)$, and $\delta \ll 1$. The authors thank G. Ya. Lyubarskiy for useful advice. Syrovatskiy is mentioned. There are 6 figures and 7 references: 5 Soviet-bloc and 2 non-Soviet-bloc.

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S/781/62/000/000/011/036

AUTHOR: Shapiro, V. D.

TITLE: Contribution to the nonlinear theory of plasma oscillations in a magnetic field

PERIODICAL: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza; doklady I konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktsiy. Fiz.-tech. inst. AN Ukr. SSR. Kiev, Izd-vo AN Ukr. SSR, 1962, 62-64.

TEXT: Steady state electric oscillations propagating in a plasma transversely to a magnetic field are considered for the case of a "cold" plasma in which there are no collisions. The initial system of equations has the form

$$(v_x - v_\phi) \frac{dv_x}{d\xi} = -\frac{e}{m} E_x - \frac{e}{mc} v_y H, \quad \xi = x - v_\phi t,$$

$$(v_x - v_\phi) \frac{dv_y}{d\xi} = -\frac{e}{m} E_y + \frac{e}{mc} v_x H, \quad v_z = 0,$$

$$\frac{d}{d\xi} [n(v_x - v_\phi)] = 0, \quad E_x = H_x = H_y = 0,$$

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$$\begin{aligned}\frac{dE_y}{d\xi} &= \beta_\phi \frac{dH}{d\xi}, \quad \frac{dE_x}{d\xi} = -\frac{4\pi en v_x}{v_\phi}, \\ \frac{dH}{d\xi} &= \beta_\phi \frac{dE_y}{d\xi} + \frac{4\pi en v_y}{c}.\end{aligned}\quad (1)$$

This equation is modified somewhat and a solution sought in the form

$$\begin{aligned}v_x &= a (\varphi_k e^{i\psi_k(\xi)} + \varphi_k^* e^{-i\psi_k(\xi)}) + u_k(\xi, a, \theta_k), \\ v_y &= a \frac{\omega_0^2 - v_\phi^2 \left(\frac{d\psi_k}{d\xi}\right)^2}{i\omega_0 v_\phi \left(\frac{d\psi_k}{d\xi}\right)} (\varphi_k e^{i\psi_k(\xi)} - \varphi_k^* e^{-i\psi_k(\xi)}) + w_k(\xi, a, \theta_k),\end{aligned}\quad (3)$$

where a and φ_k are constants, u_k and w_k are rapidly oscillating functions of ξ , and ψ_k is defined in the case of a dilute plasma by

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$$\frac{d\psi_a}{d\xi} = \frac{\omega_H}{v_\phi} \left[1 + \frac{\omega_0^2}{2\omega_H^2} \left(1 - \frac{\beta_\phi^2}{1 - \beta_\phi^2} \right) - 2 \frac{a^2}{v_\phi^2} \left(1 + 2 \frac{\omega_0^2}{\omega_H^2} \left(1 - \frac{\beta_\phi^2}{1 - \beta_\phi^2} \right) \right) \right]. \quad (4)$$

By using a nonlinear equation relating the amplitude of the first harmonic of $v_x(a)$ with $E_y(\varepsilon)$ it is found that the maximum energy of high frequency oscillations of the plasma electrons is reached when

$$\beta^2 = \frac{1}{1 + \frac{c\omega_0}{\sqrt{6} a\omega_H}}, \quad a_{\max} = c \sqrt[3]{\frac{\varepsilon}{6H_0}}$$

and for a strongly dilute plasma

$$\frac{\omega}{\omega_H} \ll \sqrt{\frac{\varepsilon}{H_0}}$$

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Ya. B. Faynberg is credited with guidance of the investigation. There is one Russian-language reference.

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AUTHOR: Shapiro, V. D.

TITLE: Heating of plasma by the acoustical resonance method

PERIODICAL: Fizika plazmy i problemy upravlyayemogo termoyadernogo sinteza; doklady i konferentsii po fizike plazmy i probleme upravlyayemykh termoyadernykh reaktsiy. Fiz.-tech. inst. AN Ukr. SSR. Kiev, Izd-vo AN Ukr. SSR, 1962, 64-66.

TEXT: It is shown in the article that by using resonant coupling between a plasma and the exciting circuit one can increase the power absorbed in the case of "acoustic" resonance by approximately 10^3 times. The feasibility of such heating is important because of the limited capabilities of resistive heating of plasma at high temperatures. The author claims that the excitation of "quasi acoustic" oscillations of a plasma in a magnetic field by means of an external TE field, proposed by Berger et al. (reference 1, Physics of Fluids, 1, 301, 1958) is of low efficiency because a resonant coupling cannot be produced between the plasma and the external circuit by this method. The case of an infinite and finite exciting coil is considered, and it is shown that the approximation of infinitely long coil is valid in practice.

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